

EXHIBIT 28



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Best Practices for Upgrading PeopleSoft Enterprise

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Best Practices for Upgrading PeopleSoft Enterprise

Introduction

As part of Oracle's commitment to Applications Unlimited, PeopleSoft Enterprise continues to evolve, offering greater value and providing new advantages for your business. Upgrading PeopleSoft Enterprise is key to realizing the maximum return on your Oracle investment.

Oracle's PeopleSoft Enterprise applications have evolved over time, and Oracle's commitment to customers, this suite of applications, and creating best-in-class products remains steadfast. The PeopleSoft Enterprise product has expanded significantly in functionality, scalability, usability, and reduced cost of ownership over the past few releases, including significant leaps made in the recent PeopleSoft Enterprise 9.1 Feature Pack release.

This white paper guides you through the major areas to consider in determining when an upgrade is appropriate for your organization. Based on your current release of PeopleSoft Enterprise software, it reviews the most common upgrade paths and aims to provide you with a framework for determining the best possible upgrade agenda for your organization. Furthermore, it also includes information about future upgrade options to the next generation of application software currently branded as Oracle Fusion Applications. Combined, Applications Unlimited and Oracle Fusion Applications give you the flexibility that you need in creating an upgrade plan that maximizes the value of your PeopleSoft Enterprise investment.

There are many reasons to consider upgrading. For example:

- Upgrading may provide access to new functionality and software applications that can help keep your organization well positioned to meet your business objectives through leveraging the latest technology
- In an increasingly rigorous regulatory compliance environment, upgrading may facilitate compliance at a lower cost through retiring customizations and deploying standard processes across your organization
- Upgrading will allow you to leverage the latest performance and usability enhancements, enabling you to increase the efficiency of your applications and your business
- You may need to upgrade to remain eligible for the highest levels of product support

In evaluating any upgrade, there are many factors to consider such as support time frames, functional capabilities, technical infrastructure, and underlying business needs. These factors are often complex and interrelated—all of which adds to the importance of determining the most appropriate upgrade strategy.

To help you make an informed decision, this paper outlines our plans for supporting and advancing PeopleSoft Enterprise as well as its successor, Oracle Fusion Applications.

Upgrade Best Practices

Treat upgrades as combined business and technology projects to get the most value out of your Oracle investment.

In preparing to successfully upgrade, there are multiple considerations to include in your upgrade planning and upgrade execution efforts. Within this paper, Oracle has gathered tips and techniques from hundreds of experienced systems managers, consultants, and partners. These recommendations are intended to help you learn from others and manage a successful upgrade project.

General Recommendations

The following general considerations should form the backbone of your upgrade initiative.

Tip #1—Determine Your Upgrade Path

Refer to the system requirements and supported platforms on the [My Oracle Support](#) Web site to determine supported upgrade paths for major releases. Verify whether you can upgrade directly to the latest release or whether you must first upgrade to a previous release before moving to this target release. In addition, evaluate the complexity of your upgrade effort based on the number of modules implemented, number of customizations, number of integration points, number of interfaces, total number of scripts, and number of user interface scripts and whether you intend to incorporate additional languages. Finally, determine the metrics and cost associated with each aspect of the upgrade. Each consideration should be addressed through a thorough upgrade assessment.

Tip #2—Treat Your Upgrade Activity as a Formal Company Project

The single best predictor of upgrade success may be the planning and project management rigor invested. A structured approach for managing the tasks, resolving issues, and measuring progress is absolutely critical. Equally important is a clearly defined and documented project scope. A defined scope is critical to project measurements necessary for time and cost containment. Experience has demonstrated that clear issue definition, strong project management, and executive ownership are critical success factors to a well-performing project effort.

If your organization has good project management expertise in house, you have an important asset to leverage. However, if this expertise is not readily available, it should be acquired early on in the project to ensure proper guidance and controls are in place. In either case, you will need someone with experience managing technical projects who can also help you anticipate and manage the effects of this initiative on other parts of the organization including end users, managers, and executives.

Tip #3—Use Change Management Appropriate for an Upgrade

During an upgrade, it is imperative to freeze metadata and system data in your production environment. With respect to the new release, ensure all relevant

patches available are applied appropriately. There are two types of new release patches to manage throughout the upgrade project: “required for upgrade” patches and “regular product” patches. For each upgrade pass, required for upgrade patches only are applied to your upgrade environment. For each user acceptance test rollout or environment, apply regular product patches to the test environment only and never to the upgrade environment. Failure to appropriately manage these different change management requirements can result in upgrade step failures and unexpected user acceptance test results.

Once you have addressed this consideration, you should proactively search for issues throughout your upgrade effort and schedule relevant updates until you reach a go/no-go milestone. At this point, you should enforce a new release content freeze to stabilize the environment. For information on relevant patches, periodically consult the [My Oracle Support](#) Web site.

Tip #4—Build an Upgrade Team with Broad and Complementary Skills

Several different skill sets will be necessary to successfully upgrade your system. The following list details recommended roles that should be staffed within an upgrade project team. Note that a steering committee is critical to success. Creation of an active and interested steering committee is an imperative because critical business decisions must be effectively made and dealt with throughout the project. Furthermore, project failures are often traced to the lack of an effective governance body.

A typical upgrade team should include the following members:

- Steering committee
- Business owner of the application (such as the CFO)
- Application data owner
- Key user group representatives
- Dedicated project manager
- Technical functional lead
- PeopleSoft administrator
- Database administrator
- Technical change management owner/release coordinator
- Operating system administrator(s)
- Testers—both technical and functional
- Technical upgrade specialist(s)
- Organizational change management/training lead

Tip #5—Utilize Peer and Oracle Resources

Most organizations sponsor upgrade projects infrequently, so it is important to leverage the experiences of others as much as possible.

Use these links to gather information from Oracle and interact with other users of PeopleSoft Enterprise.

- My Oracle Support Communities:
<https://communities.oracle.com>
- Oracle Open world Presentation Library:
<http://www.oracle.com/technetwork/database/options/spatial/oow10-idx-177286.html>
- OAUG
<http://oaug.org/>
- OHUG
www.ohug.org
- Oracle User Group:
OracleUserGroup_ww@oracle.com
- Higher Education User Group
<http://www.hcug.org/>
- Regularly check the [My Oracle Support](#) web site

Tip #6—Decide When to Change or Add Business Processes

In many cases, there should be functionality in the release being evaluated that will help your business improve processes and automate tasks. This can be a small enhancement to business processes you are already using, or larger changes such as the adoption of a new module. One critical decision for your upgrade project is whether you will implement the new functionality as part of the upgrade, or upgrade your current processes without change, and implement new functionality as a follow-on project.

Generally, implementing your existing processes in a new system can be a way to mitigate risk in the upgrade project. However, your business realities may preclude this approach, especially if the updated processes native in the software can markedly improve operations. For example, the business may be driving to take advantage of new capabilities as quickly as possible, or it may be more appropriate to modify processes and engage in a coordinated training effort to increase user adoption of the new solution.

By carefully weighing the pros and cons of these approaches, you can choose the best strategy for your organization.

Tip #7—Plan for Upgrade Tuning

Another critical area that should be considered is the performance tuning of your new system. Tuning your production upgrade scripts can significantly reduce downtime during the final stages of your upgrade. Examples of upgrade tuning include eliminating SQL statements that do not affect any of your data, executing long-running SQL statements in parallel, and creating and altering tables in parallel.

Take advantage of the expertise of an Oracle consultant who has experience tuning your new release to ensure you get the most from your infrastructure, even if you have the expertise to execute other areas of the project yourself. These experts are quite specialized in their field, so it makes sense to have a source identified to prevent last minute scrambling. Your Oracle Consulting Director is a great source for this type of discussion around resources and timing.

Oracle rigorously tests each supported upgrade path for technical and functional accuracy and for optimized performance. The most productive performance testing is completed on customer data. Whenever possible, Oracle's upgrade development experts perform detailed analysis on customer databases to tune the conversion code. To participate in the Customer Database program, contact your Oracle account manager.

Tip #8—Get Current Product and Upgrade Information

Make sure that you are using available Oracle resources to help you gather current information for your project, and work with Oracle Support for critical case management throughout your conversion timeframe. Oracle has increased focus on assembling assets to help customers with upgrades and leveraging these resources will increase your ability to upgrade smoothly.

Oracle maintains several resources to ensure that you obtain the most relevant information pertinent for your upgrade initiative. Several outstanding resources can be located on publicly available Oracle systems. In addition, upon product general availability, each major Application pillar will post related upgrade information as a good starting point for all types of upgrade information.

Finally, make sure you get the most current documentation available. Oracle provides several types of documentation to help you navigate a successful upgrade project. These materials can be accessed from the [My Oracle Support](#) web site.

Tip #9—Escalate and Resolve Problems as Appropriate

Use Oracle Support if you believe application issues are being experienced. Train your first line staff to log cases early and as completely as possible, including appropriate trace files, environment information, and highlighting business and technical milestone dates helpful for determining case prioritization. The Global Support Center staff and your Account Team can help in this area.

To ensure that your project progresses as smoothly as possible, Oracle encourages you to escalate Priority 1 issues (P1) as early as possible. These issues are typically

points. Creating this checklist as soon as possible is a good way to organize project goals, validate your plan, and identify your success criteria before the pressure is on to complete the project. This list should be reviewed 30 days before go-live to ensure progress is sufficient to complete in time.

Tip #15-Understand and Mitigate Project Risks

Early in the project a risk analysis should be undertaken to determine project risks such as resource contention, other projects going live at the same time, and so on. For risks that have a high probability of occurring and have a large impact, specific mitigation plans should be developed. These plans describe, in advance, what actions to take if the risk becomes reality. The analysis and plans need to be reviewed on a regular basis throughout the project.

Look for key points of failure, especially in the area of resource loading for your technical and business specialists. If you lack bench strength in any particular areas, develop a plan to supplement and/or back up critical personnel.

Preparing Your Technical Environment

While many of the activities required for a successful upgrade project involve end users and net change for the applications, you must also manage the changes to your technical environment carefully.

Tip #16—Evaluate Your Architecture

There are several key technological decisions to make that will affect your project. Changing any part of the architecture increases the complexity of the upgrade project, and careful planning is required to determine when to make this change as well as account for the technical work required. If you are not planning on changing architecture (although it may be mandatory for you to change your architecture depending on the version of the applications you are on currently), it is important to clarify this throughout your organization and create consensus to minimize disruptions. You should plan to complete a full performance test prior to the go-live date. This action will better allow your team to tune the system, getting all you can from your available resources and minimizing performance related issues at go-live.

It is imperative that these assessments be made early on to remove uncertainty and allow the project team to focus on other upgrade related details.

- **Platform:** Most upgrading customers choose to remain on their existing hardware, operating system, and database architecture through the upgrade. However, many customers take advantage of the upgrade timeframe to upgrade hardware and transition to the latest support version of the operating system and other third-party software. If your requirements include considering a change in this area, it is vital that this decision be made early on as the platform often drives most, if not all, of the software utilized.

Microsoft SQL Server customers:
Microsoft SQL Server 2005 is required
when upgrading to PeopleSoft Enterprise 9
on PeopleTools 8.48 or higher.

- **Middleware:** One of the key decisions is which middleware platform you will use. PeopleSoft Enterprise supports both the IBM WebSphere products as well as Oracle Fusion Middleware. In choosing your middleware, be sure to understand the licensing requirements early to ensure that contractual issues will not become a barrier as the project moves forward.
- **Nonproduction Hardware:** It is important that all of your testing environments are adequate for handling the anticipated testing loads. Too often, we only concern ourselves only with the production environment and assume that performance is not important in a test environment. Bad performance during critical phases of testing can not only provide users with a bad experience, but it can also affect the upgrade schedule by hindering completion of testing and delaying system deployment.
- **Unicode:** Another key decision is whether or not you will convert your database to Unicode. Most customers have data in a non-Unicode format. There are benefits and costs to each approach. In either case, a clear direction in this area will clarify hardware and project requirements and focus you on planning a successful upgrade.

Tip #17—Calculate New Hardware Sizing

Given the potential changes to your current system configuration, it is absolutely vital to get an accurate sizing for your new architecture. The combination of enhanced PeopleSoft Enterprise product functionality, technological change, anticipated changes in the way you use the applications, and possible implementation of new modules could all impact sizing requirements for the upgraded solution.

Accurate sizing information will help you decide whether you can reuse current hardware, need to increase hardware resources, or should consider upgrading one or more of your servers. Similarly, sizing considerations are important whether or not you intend to upgrade in place (with potential reuse) or switch to a new hardware platform during the upgrade process. Performance and load testing can help determine if the hardware is adequate to support your production requirements.

Tip #18—Identify Custom Code and Scripting

Any custom code integrated with the PeopleSoft application may be impacted during an upgrade. It is important to not only identify any custom code but also track the progress of any retrofit efforts during the project. You need to identify the code, who owns the code and its status. Included in the PeopleSoft Enterprise application upgrade Initial Pass, there are steps to identify your database metadata customizations. Compare reports from these steps can be leveraged to identify customized scripts and processes on your system's file server.

All interfaces, form customizations, and customized reports will require extensive testing to ensure that they have not been affected by changes to tables or APIs in

the upgraded software. Custom responsibilities and menus must be reviewed and potentially updated as well. In some cases, customizations can be removed following an upgrade if new features and functionality satisfy the business requirements previously met with the custom code.

Tip #19—Defragment and Reorganize Your Database

From a general database perspective, there are a few actions that can be completed to assist the upgrade project. To optimize the efficiency of the system as you upgrade, you should defragment and reorganize the database to the greatest extent possible beforehand. Your database administrator should be able to use their existing database management tools to accomplish this goal.

Tip #20—Study and Adhere to Current Minimum Technical Requirements

A critical step in ensuring success is adhering to the technical requirements for your system. This applies to the release currently in production as well as the release to which you are moving. Make sure that you review these requirements early in the project to ensure that you have the right components and understand any updates or changes and how they will affect your upgrade plan.

Current information on minimum technical requirements can be located on the [My Oracle Support](#) Web site.

Tip #21—Follow the Specific Platform Recommendations

Refer to the [My Oracle Support](#) Web site for details. Log on and proceed to the Supported Platforms and Platform Communications section for Oracle recommendations regarding your specific RDBMS and PeopleTools Release combinations.

Installing Your New Release

Installing the new solution properly is a critical component of the upgrade process.

Tip #22—Install Verification

After installing the new PeopleSoft Enterprise solution, you should complete an inventory check to confirm that all components were installed correctly and are behaving properly. Details on the installation process can be obtained on the [My Oracle Support](#) Web site and install documentation should be explicitly followed to minimize potential issues. Once all aspects of the installation are confirmed, the process can continue.

Tip #23—Get Code Current

In addition to the basic installation steps, it is critical to get “code current” in the new environment before you invest in testing, configuration, and validation associated with going live. This process requires the most current aggregate fixes to be applied, such as Updates and Tools releases. Whether or not you install these fixes to the system early in the project is a significant predictor of project success.